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The Journal of Conflict Resolution; Mar 1962; 6, 1; ABI/INFORM Global
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Introduction

A *bargain* is defined in Webster's Unabridged Dictionary as "an agreement between parties settling what each shall give and receive in a transaction between them"; it is further specified that a bargain is "an agreement or compact viewed as advantageous or the reverse." When the term "agreement" is broadened to include tacit, informal agreements as well as explicit agreements, it is evident that bargains and the processes involved in arriving at bargains ("bargaining") are pervasive characteristics of social life.

The definition of "bargain" fits under sociological definitions of the term "social norm." In this light, it may be seen that the experimental study of the bargaining process and of bargaining outcomes provides a means for the laboratory study of the development of certain types of social norms. It is well to recognize, however, that bargaining situations have certain distinctive features which, unlike many other types of social situations, make it relevant to consider the conditions which determine whether or not a social norm will develop as well as to consider the conditions which determine the nature of the social norm if it develops. Bargaining situations highlight for the investigator the need to be sensitive to the possibility that, even where cooperation would be mutually advantageous, shared purposes may not develop, agreement may not be reached, interaction may be regulated antagonistically rather than normatively.

The essential features of a bargaining situation exist when:

1. both parties perceive that there is the possibility of reaching an agreement in which each party would be better off, or no worse off, than if no agreement is reached;
2. both parties perceive that there is more than one such agreement which could be reached; and
3. both parties perceive each other to have conflicting preferences or opposed interests with regard to the different agreements which might be reached.

Everyday examples of a bargaining situation include such situations as: the buyer–seller relationship when the price is not fixed; the husband and wife who want to spend an evening out together but have conflicting preferences about where to go; union–management negotiations; drivers who meet at an intersection when there is no clear right of way; disarmament negotiations.

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[1] This paper was awarded the 1961 Meritorious Essay Prize in Socio-Psychological Inquiry by the American Association for the Advancement of Science. Parts of it have appeared previously in Deutsch and Krauss (1960).

From our description of the essential features of a bargaining situation it can be seen that, in terms of our prior conceptualization of cooperation and competition (Deutsch, 1949), it is a situation in which the participants have mixed motives toward one another: on the one hand, each has interest in cooperating so that they reach an agreement; on the other hand, they have competitive interests with regard to the nature of the agreement they reach. In effect, to reach agreement the cooperative interest of the bargainers must be strong enough to overcome their competitive interests. However, agreement is not only contingent upon the *motivational* balances of cooperative to competitive interests but also upon the situational and *cognitive* factors which would facilitate or hinder the recognition or invention of a bargaining agreement that reduces the opposition of interest and enhances the mutuality of interest.[2]

The discussion of the preceding paragraph leads to the formulation of two general, closely related propositions about the likelihood that a bargaining agreement will be reached.

1. Bargainers are more likely to reach an agreement, the stronger are their cooperative interests in comparison with their competitive interests in relationship to each other.
2. Bargainers are more likely to reach an agreement, the more resources they have available for the recognition or invention of potential bargaining agreements and the more resources they have for communication to one another once a potential agreement has been recognized or invented.

From these two basic propositions and additional hypotheses concerning the conditions which determine the strengths of the cooperative and competitive interests and the amount of available resources, we believe it is possible to explain the ease or difficulty of arriving at a bargaining agreement. We shall not present a full statement of these hypotheses here but shall instead turn to a description of a series of experiments that relate to Proposition 1.

Experiment I

The first experiment to be reported here was concerned with the effect of the availability of threat upon bargaining in a two-person experimental bargaining game we have devised.[3] Threat is defined as the expression of an intention to do something which is detrimental to the interests of another. Our experiment was guided by two assumptions about threat:

1. If there is a conflict of interest and a means of threatening the other person exists, there will be a tendency to use the threat in an attempt to force the other person to yield. This tendency will be stronger, the more irreconcilable the conflict is perceived to be.
2. If threat is used in an attempt to intimidate another, the threatened person (if he considers himself to be of equal or superior status) will feel hostility toward the threatener and will tend to respond with counterthreat and/or increased resistance to

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[2] Schelling, in a series of stimulating papers on bargaining (1957, 1958), has also stressed the "mixed motive" character of bargaining situations and has analyzed some of the cognitive factors which determine agreements.

[3] The game was conceived and originated by the senior author; the junior author designed and constructed the apparatus employed in these experiments. We gratefully acknowledge the expert advice of R. E. Kudlick in the design of the electrical circuitry employed.

> yielding. We qualify this assumption by stating that the tendency to resist will be greater, the greater the perceived probability and magnitude of detriment to the other and the lesser the perceived probability and magnitude of detriment to the potential resistor from the anticipated resistance to yielding.

The second assumption is based upon the view that to allow oneself to be intimidated, particularly by someone who does not have the right to expect deferential behavior, is (when resistance is not seen to be suicidal or useless) to suffer a loss of social face and, hence, of self-esteem; and that the culturally defined way of maintaining self-esteem in the face of attempted intimidation is to engage in a contest for supremacy *vis-à-vis* the power to intimidate or, minimally, to resist intimidation. Thus, in effect, it can be seen that the use of threat (and if it is available to be used, there will be a tendency to use it) should strengthen the competitive interests of the bargainers in relationship to one another by introducing or enhancing the competitive struggle for self-esteem. Hence, from Proposition 1, it follows that the availability of a means of threat should make it more difficult for the bargainers to reach agreement (providing that the threatened person has some means of resisting the threat). The preceding statement is relevant to the comparison of both of our experimental conditions (described below) of threat, *bilateral* and *unilateral*, with our experimental condition of *nonthreat*. We are hypothesizing that a bargaining agreement is more likely to be achieved when neither party can threaten the other, than when one or both parties can threaten the other.

It is relevant now to compare the situations of bilateral threat and unilateral threat. For several reasons, it seems likely that a situation of bilateral threat is less conducive to agreement than is a condition of unilateral threat. First, the sheer likelihood that a threat will be made is greater when two people rather than one have the means of making the threat. Secondly, once a threat is made in the bilateral case, it is likely to evoke counterthreat. Withdrawal of threat in the face of counterthreat probably involves more loss of face (for reasons analogous to those discussed above in relation to yielding to intimidation) than does withdrawal of threat in the face of resistance to threat. Finally, in the unilateral case, although the person without the threat potential can resist and not yield to the threat, his position *vis-à-vis* the other is not so strong as the position of the threatened person in the bilateral case. In the unilateral case, the threatened person may have a worse outcome than the other whether he resists or yields; while in the bilateral case, the threatened person is sure to have a worse outcome if he yields but he may insure that he does not have a worse outcome if he does not yield.

METHOD

Subjects (Ss) were asked to imagine that they were in charge of a trucking company, carrying merchandise over a road to a destination. For each trip they completed they made \$ .60, minus their operating expenses. Operating expenses were calculated at the rate of one cent per second. So, for example, if it took thirty-seven seconds to complete a particular trip, the player's profit would be \$ .60 – \$ .37 or a net profit of \$ .23 for that particular trip.

Each subject was assigned a name, Acme or Bolt. As the "road map" (see Figure 1) indicates, both players start from separate points and go to separate destinations. At one point their paths coincide. This is the section of road labeled "one-lane road."

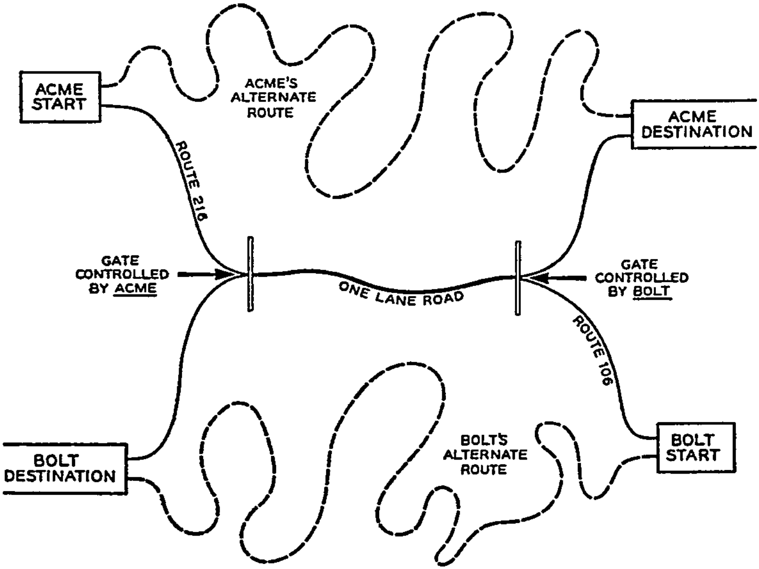

FIG. 1. Subject's Road Map

This section of road is only one lane wide; this means that two trucks, heading in opposite directions, could not pass each other. If one backs up the other can go forward, or both can back up, or both can sit there head-on without moving.

There is another way for each subject to reach the destination on the map and this is labeled the "alternate route." The two players' paths do not cross on this route, but the alternate is 56 per cent longer than the main route. Subjects were told that they could expect to lose at least $ .10 each time they used the alternate route.

At either end of the one-lane section there is a gate which is under the control of the player to whose starting point it is closest. By closing the gate, one player can prevent the other from traveling over that section of the main route. It is the use of the gate which we will call the threat potential in this game. In the bilateral threat potential condition (*Two Gates*) both players had gates under their control. In a second condition of unilateral threat (*One Gate*) Acme had control of a gate but Bolt did not. In a third condition (*No Gates*) neither player controlled a gate.

Subjects played the game seated in separate booths positioned so that they could not see each other but both could see the experimenter. Each *S* had a "control panel" mounted on a 12″ × 18″ × 12″ sloping-front cabinet (see Figure 2). The apparatus consisted essentially of a reversible impulse counter which was pulsed by a recycling timer. When the *S* wanted to move her truck forward she threw a key which closed a circuit pulsing the "add" coil of the impulse counter which was mounted on her control panel. As the counter cumulated, the *S* was able to determine her "position" by relating the number on her counter to reference numbers which

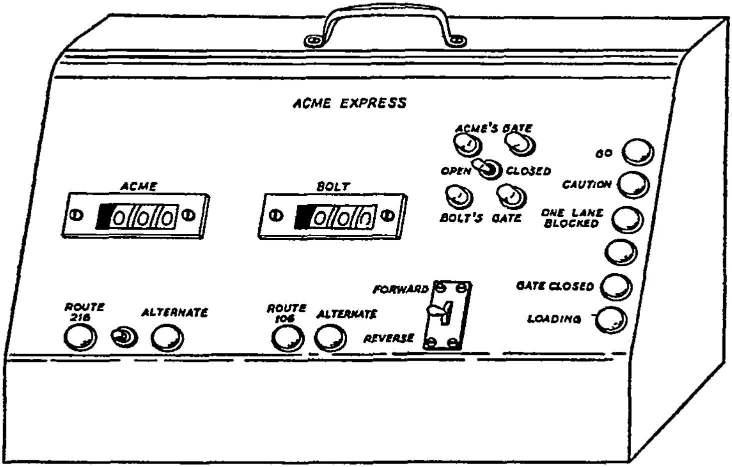

Fig. 2. Subject's Control Panel

had been written in on her "road map." Similarly, when she wished to reverse, she would throw a switch which activated the "subtract" coil of her counter, thus subtracting from the total on the counter each time the timer cycled.

S's counter was connected in parallel to counters on the other S's panel and on E's panel. Thus each player had two counters on her panel, one representing her own position and the other representing the other player's. Provision was made in construction of the apparatus to cut the "other player's" counter out of the circuit, so that each S knew only the position of her own truck. This was done in the present experiments.

The only time one player definitely knew the other player's position was when they had met head-on on the one-way section of road. This was indicated by a traffic light mounted on the panel. When this light was on, neither player could move forward unless the other moved back. The gates were controlled by toggle switches; panel-mounted indicator lights showed, for both subjects, whether each gate was open or closed.

The following "rules of the game" were stated to the Ss:

1. A player who started out on one route and wished to switch to the other route could do so only after first reversing and going back to the start position. Direct transfer from one route to the other was not permitted except at the start position.
2. In the conditions where Ss had gates, they were permitted to close the gates only when they were traveling on the main route. (That is, they were not permitted to close the gate while on the alternate route or after having reached their destinations.) However, Ss were permitted to open their gates at any point in the game.

Ss were taken through a number of practice exercises to familiarize them with the game. In the first trial they were made to meet head-on on the one-lane path; Acme was then told to back up until she was just off the one-lane path and Bolt was told to go forward. After Bolt had gone through the one-lane path, Acme was told to go forward. Each continued going forward until each arrived at her destination. The second practice trial was the same as the first except that Bolt rather than Acme backed up after meeting head-on. In the next practice trial, one of the players was made to wait just before the one-way path while the other traversed it and then was allowed to continue. In the next practice trial, one player was made to take the alternate route and the other was made to take the main route. Finally, in the Bilateral and Unilateral Threat conditions the use of the gate was illustrated (by having the player get on the main route, close the gate, and then go back and take the alternate route). The Ss were told explicity with emphasis that they did *not* have to use the gate. Before each trial in the game the gate or gates were in the open position.

The instructions stressed an individualistic motivational orientation. Ss were told to try to earn as much money for themselves as possible and to have no interest in whether the other player made money or lost money. They were given $4.00 in poker chips to represent their working capital and told that after each trial they would be given "money" if they made a profit or that "money" would be taken from them if they lost (i.e., took more than 60 seconds to complete their trip). The profit or loss of each *S* was announced so that both Ss could hear the announcement after each trial. Each pair of subjects played a total of twenty trials; on all trials, they started off together. In other words, each trial presented a repetition of the same bargaining problem. In cases where subjects lost their working capital before the twenty trials were completed, additional chips were given them. Subjects were aware that their monetary winnings and losses were to be imaginary and that no money would change hands as a result of the experiment.

Sixteen pairs of subjects were used in each of the three experimental conditions. The Ss were female clerical and supervisory personnel of the New Jersey Bell Telephone Company who volunteered to participate during their working day.[4] Their ages ranged from 20 to 39, with a mean of 26.2. All were naive to the purpose of the experiment. By staggering the arrival times and choosing girls from different locations, we were able to insure that our subjects did not know with whom they were playing.

RESULTS[5]

The best single measure of the difficulty experienced by the bargainers in reaching an agreement is the sum of each pair's profits (or losses) on a given trial. The higher the sum of the payoffs to the two players on a given trial, the less time it took them to arrive at a procedure for sharing the one-lane path of the main route. (It was, of course, possible for one or both of the players to decide to take the alternate route so as to avoid a protracted stalemate during the process of bargaining. This, however, always resulted in at least a $ .20 smaller joint payoff if only one player took the alternate route, than an optimally arrived at agreement concerning the use of the one-way path.) Figure 3 presents the medians of the summed payoffs (i.e., Acme's plus Bolt's) for all pairs in each of the three experimental conditions over the twenty

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[4] We are indebted to the New Jersey Bell Telephone Company for their cooperation in providing subjects and facilities for this experiment.

[5] We are indebted to M. J. R. Healy for suggestions concerning the statistical analysis of these data.

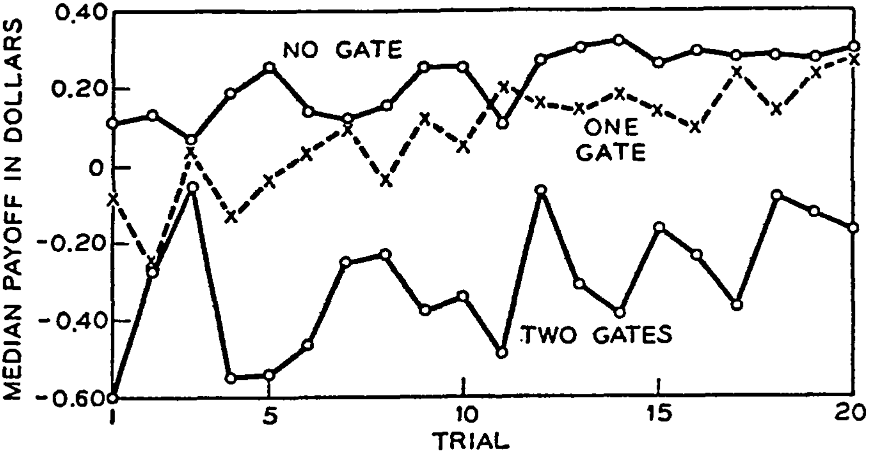

Fig. 3. Median Joint Payoff (Acme + Bolt) over Trials

trials.[6] These results indicate that agreement was least difficult to arrive at in the No Threat condition, was more difficult to arrive at in the Unilateral Threat condition, and exceedingly difficult or impossible to arrive at in the Bilateral Threat condition. (See also Table 1).

Figure 4 compares Acme's median profit in the three experimental conditions over the 20 trials; while Figure 5 compares Bolt's profit in the three conditions. (In the Unilateral Threat condition, it was Acme who controlled a gate and Bolt who did not.) It is evident that Bolt's as well as Acme's outcome is somewhat better in the No Threat condition than in the Unilateral Threat condition; Acme's as well as Bolt's outcome is clearly worst in the Bilateral Threat condition. (See Table 1 also.) However, Figure 6 reveals that Acme does somewhat better than Bolt in the Unilateral condition. Thus, if threat-potential exists within a bargaining relationship it is better to possess it oneself than to have the other

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[6] Medians are used in graphic presentation of our results because the wide variability of means makes inspection cumbersome.

TABLE 1

Mean Payoffs Summated over the Twenty Trials

Variable	Means			Statistical Comparisons: p Values[1]			
	(1) No Threat	(2) Unilateral Threat	(3) Bilateral Threat	Over-all	(1) vs. (2)	(1) vs. (2)	(2) vs. (3)
Summed Payoffs (Acme + Bolt)	203.31	–405.88	–875.12	0.01	0.01	0.01	0.05
Acme's Payoff	122.44	–118.56	–406.56	0.01	0.10	0.01	0.05
Bolt's Payoff	80.88	–287.31	–468.56	0.01	0.01	0.01	0.20

[1] Evaluation of the significance of over-all variation between conditions is based on an F test with 2 and 45 df. Comparisons between treatments are based on a two-tailed t test.

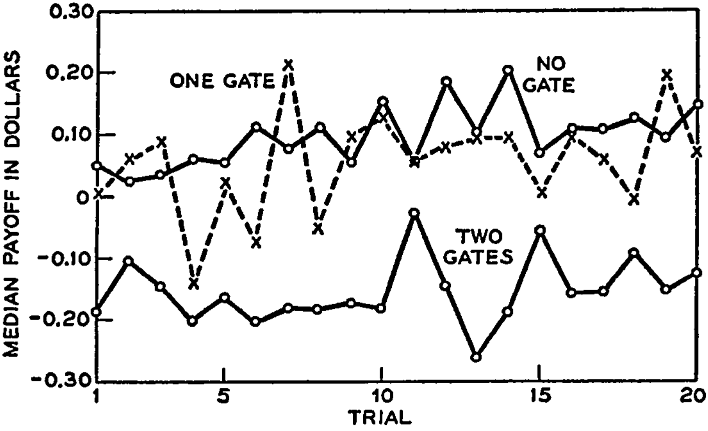

Fig. 4. Acme's Median Payoff

party possess it. However, it is even better for neither party to possess it. Moreover, from Figure 5, it is evident that Bolt is better off not having than having a gate even when Acme has a gate: Bolt tends to do better in the Unilateral Threat condition than in the Bilateral Threat condition.

To provide the reader with a more detailed description of what went on during the bargaining game, we present a synopsis of the game for one pair in each of the three experimental treatments.

NO THREAT CONDITION

Trial 1. The players met in the center of the one-way section. After some back-and-

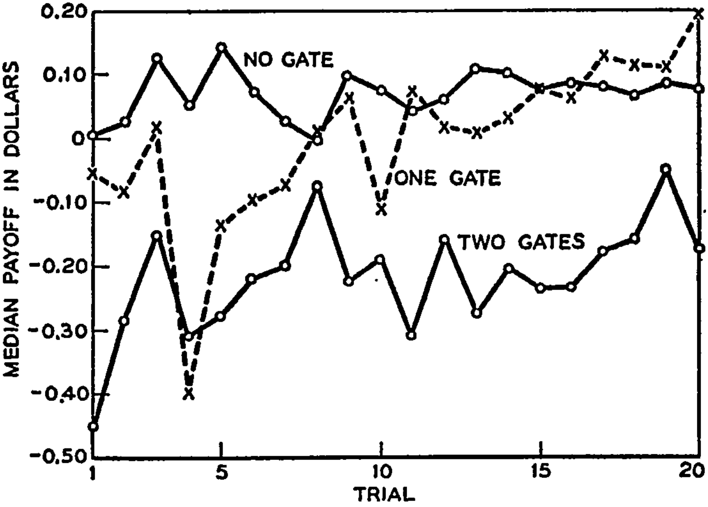

Fig. 5. Bolt's Median Payoff

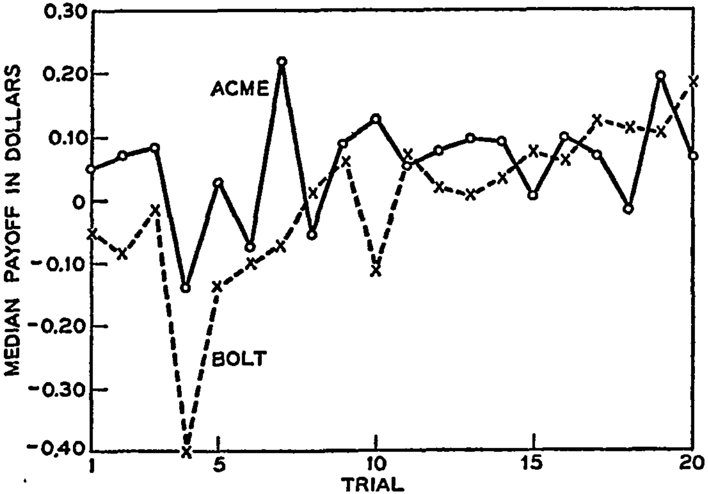

FIG. 6. Acme's and Bolt's Median Payoff in Unilateral Threat Condition

forth movement Bolt reversed to the end of the one-way section, allowing Acme to pass through, and then proceeded forward herself.

Trial 2. They again met at the center of the one-way path. This time, after moving back and forth deadlocked for some time, Bolt reversed to start and took the alternate route to her destination, thus leaving Acme free to go through on the main route.

Trial 3. The players again met at the center of the one-way path. This time, however, Acme reversed to the beginning of the path, allowing Bolt to go through to her destination. Then Acme was able to proceed forward on the main route.

Trial 5. Both players elected to take the alternate route to their destinations.

Trial 7. Both players took the main route and met in the center. They waited, deadlocked, for a considerable time. Then Acme reversed to the end of the one-way path allowing Bolt to go through, then proceeded through to her destination.

Trials 10 through 20. Acme and Bolt fall into a pattern of alternating who is to go first on the one-way section. There is no deviation from this pattern.

The only other pattern which emerges in this condition is one in which one player dominates the other. That is, one player consistently goes first on the one-way section and the other player consistently yields.

UNILATERAL THREAT CONDITION

Trial 1. Both players took the main route and met in the center of it. Acme immediately closed the gate, reversed to "start" and took the alternate route to her destination. Bolt waited for a few seconds, at the closed gate, then reversed and took the alternate route.

Trial 2. Both players took the main route and met in the center. After moving back and forth deadlocked for about fifteen seconds, Bolt reversed to the beginning of the one-way path, allowed Acme to pass, and then proceeded forward to her destination.

Trial 3. Both players started out on the main route, meeting in the center. After moving back and forth deadlocked for a while, Acme closed her gate, reversed to "start" and took the alternate route. Bolt, meanwhile, waited at the closed gate. When Acme arrived at her destination she opened the gate, and Bolt went through to complete her trip.

Trial 5. Both players took the main route, meeting at the center of the one-way section. Acme immediately closed her gate, reversed and took the alternate route. Bolt waited at the gate for about ten seconds, then reversed and took the alternate route to her destination.

Trial 10. Both players took the main route and met in the center. Acme closed her gate, reversed and took the alternate route. Bolt remained waiting at the closed gate. After Acme arrived at her destination, she opened the gate and Bolt completed her trip.

Trial 15. Acme took the main route to her destination and Bolt took the alternate route.

Trials 17, 18, 19 and 20. Both players took the main route and met in the center. Bolt waited a few seconds, then reversed to the end of the one-way section allowing Acme to go through. Then Bolt proceeded forward to her destination.

Other typical patterns which developed in this experimental condition included an alternating pattern similar to that described in the No Threat condition, a dominating pattern in which Bolt would select the alternate route leaving Acme free to use the main route unobstructed, and a pattern in which Acme would close her gate and then take the alternate route, also forcing Bolt to take the alternate route.

BILATERAL THREAT CONDITION

Trial 1. Acme took the main route and Bolt took the alternate route.

Trial 2. Both players took the main route and met head-on. Bolt closed her gate. Acme waited a few seconds, then closed her gate, reversed to "start," then went forward again to the closed gate. Acme reversed and took the alternate route. Bolt again reversed, then started on the alternate route. Acme opened her gate and Bolt reversed to start and went to her destination on the main route.

Trial 3. Acme took the alternate route to her destination. Bolt took the main route and closed her gate before entering the one-way section.

Trial 5. Both players took the main route and met head-on. After about ten seconds spent backing up and going forward, Acme closed her gate, reversed and took the alternate route. After waiting a few seconds, Bolt did the same.

Trials 8, 9, 10. Both players started out on the main route, immediately closed their gates, reversed to start and took the alternate route to their destinations.

Trial 15. Both players started out on the main route and met head-on. After some jockeying for position, Acme closed her gate, reversed and took the alternate route to her destination. After waiting at the gate for a few seconds, Bolt reversed to start and took the alternate route to her destination.

Trials 19, 20. Both players started out on the main route, immediately closed their gates, reversed to start and took the alternate routes to their destinations.

Other patterns which emerged in the Bilateral Threat condition included alternating first use of the one-way section, one player's dominating the other on first use of the one-way section, and another dominating pattern in which one player consistently took the main route while the other consistently took the alternate route.

DISCUSSION

The results of Experiment I clearly indicate that the availability of a threat potential in our experimental bargaining situation adversely affects the player's ability to reach effective agreements. In terms of our introductory analysis of bargaining as a mixed motive situation (i.e., one in which both competitive and cooperative motivations are acting upon the participants), we can interpret these results as indicating that the existence of threat enhances the competitive aspects of interaction.

These results, we believe, reflect psychological tendencies which are not confined to our bargaining situation: the tendency to use threat (if a means for threatening is available) in an attempt to force the other person to yield when he is seen as an obstruction; the tendency to respond with counter-threat or increased resistance to attempts at intimidation. How general are these tendencies? What are the conditions likely to elicit them? Answers to these questions are necessary before our results can be generalized to other situations. However, we will postpone consideration of the psychological processes which operate in bargaining until we have had an opportunity to examine the results of some further experiments.

Experiment II

Our discussion thus far has suggested that the psychological factors which operate in our experimental bargaining game are to be found in many real-life bargaining situations. However, it is well to point out an important unique feature of our experimental game: namely, that the bargainers had no opportunity to communicate verbally with one another. Prior research on the role of communication in trust (Deutsch, 1958, 1960; Loomis, 1959) suggests that the opportunity for communication would ameliorate the difficulty bargainers experience in reaching agreement. This possibility was expressed spontaneously by a number of our subjects in a post-experimental interview. It should be noted, however, that the same research cited above (Deutsch, 1960) indicates that communication may not be effective between competitively oriented bargainers.

To test the effect of communication upon bargaining, we undertook an experiment in which subjects were permitted to talk over an intercom hookup. It was further decided to differentiate Bilateral Communication (both parties permitted to talk) from Unilateral Communication (only one party is permitted to talk).

METHOD

The experimental apparatus, instructions to the Ss and training procedures here were the same as described in Experiment I. In addition, each S was equipped with a headset (earphones and microphone) hooked into an intercom system. The intercom was so constructed that *E* could control the direction of *Ss'* communication. This was necessary so that in the Unilateral Communication condition one *S* was prevented from talking to the other, but both were able to talk to *E* when necessary. A filter, built into the intercom's amplification system, distorted voice quality sufficiently to make it unlikely that *Ss* would recognize one another's voices even if they were previously acquainted, without significantly impairing intelligibility.[7] Ss received the following instructions on communication:

> During the game, when your trucks are en route, you may communicate with each other . . . (Here Ss received instructions on operating the intercom system) . . . In talking to the other player you may say anything you

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[7] In only one group did an *S* recognize her partner's voice; this group was discarded.

want; or if you don't want to talk you don't have to. You may talk about the game, about what you'd like to happen in the game, what you're going to do, what you'd like the other player to do, or anything else that comes to mind. What you talk about—or whether you decide to talk or not—is up to you.

These instructions were modified in the Unilateral Communication condition to indicate that only one player (Acme) would be permitted to talk. Communication was not allowed between trials; only during the actual "trip" were Ss permitted to talk.

The two levels of our communication variable (bilateral and unilateral) were combined with the three levels of threat employed in the previous study to produce a 2 × 3 factorial experiment. It was necessary to employ such a design to test the possibility that communication might be differentially effective under different conditions of threat.

Five pairs of Ss were entered randomly into each of six treatment conditions. All were female clerical and secretarial employees of the Bell Telephone Laboratories and were, in most respects, comparable to the New Jersey Bell Telephone employees used in Experiment I. Again, Ss were selected from different work areas and arrival times were staggered to prevent Ss from knowing their partner's identity.

RESULTS

An analysis of variance of Experiment II indicates that our communication variable had no effect on the players' ability to reach effective agreements; however the "threat" variable, as in the first experiment, had a significant effect. It should also be noted that the results of this experiment are not significantly different from the findings of Experiment I, where no communication was permitted. For economy of presentation these cross-experiment comparisons will be included with the results of Experiment III below.

Product–moment correlations were computed between frequency of communication for each pair (the number of trials out of twenty in which one or both Ss spoke) and joint payoff. Both over-all and within the threat conditions no significant relation was observed between frequency of communication and payoff. As will be discussed below, only a minimum of communication did occur and quite likely frequency of communication in this situation was determined by characteristics of the Ss which were irrelevant to the achievement of agreement in the bargaining situation.

An additional finding of interest: it will be recalled that in the Unilateral Threat condition Acme was the player possessing the threat potential. Similarly, in the Unilateral Communication condition, it was Acme who was allowed to talk. To ascertain the effect of this double asymmetry we ran an additional five pairs of Ss in a Unilateral Threat–Unilateral Communication condition in which Bolt was given the opportunity to talk, while Acme still possessed the threat potential. A comparison of this group with the standard Unilateral Threat–Unilateral Communication condition revealed no significant differences between them.

We can also examine the gross frequency of talking in the three threat conditions. Each pair of Ss received a score based upon the number of trials on which one or both players spoke to the other. The mean frequency of communication in the three threat conditions is presented in Table 2a. Most talking occurs in the No Threat condition; the rate of talking in the Unilateral and Bilateral Threat conditions is approximately equal. However, these differences, when tested by a one-way analysis of vari-

TABLE 2

Frequency of Talking

Table 2a

Frequency of Talking in the Three Threat Conditions

	No Threat	Unilateral Threat	Bilateral Threat
Mean number of trials on which talking occurred	5.7	3.9	3.3

Table 2b

Frequency of Talking in the Bilateral vs. Unilateral Communication Conditions

	Bilateral Communication	Unilateral Communication
Mean number of trials on which talking occurred	5.8	2.7

ance, are not large enough to permit a rejection of the null hypothesis.

If we examine frequency of talking in the Unilateral vs. Bilateral Communication conditions we find that, in accordance with expectation, significantly more talk occurs in the bilateral condition ($F = 31.04$, with 1 and 38 d.f.; $p < 0.001$). These means are presented in Table 2b.

We had intended to tape-record our *Ss'* communications to preserve them for a subsequent content analysis. Unfortunately, breakdowns of the recording equipment and electrical distortions introduced by the bargaining game apparatus rendered this impossible. Thus, except for the impressions gained by *E* who monitored all communication, these data are lost and any discussion of communication content must necessarily be impressionistic. Modifications of the equipment are presently under way which will correct these difficulties.

In a post-experimental questionnaire and interview we questioned *Ss* closely in an attempt to ascertain the reason for the paucity of communication. Most of our *Ss* were at a loss to explain why they did not talk, although almost all acknowledged that they were less than normally talkative. With some probing on *E*'s part, a frequent comment concerned "the difficulty of talking to someone you don't know." Possibly, the communication process normally involves a system of reciprocal expectations by which a speaker has some idea of the effect his words will have on a listener. Even in an encounter between strangers these expectations may be partly derived from such visual cues as appearance, dress, facial expression, etc. All of these cues were absent in the communication between our *Ss*. Interestingly enough, when *Ss* were introduced after the experimental session, a great deal of spontaneous chatter ensued. And this was true even of *Ss* who had not talked at all during the experimental session.

DISCUSSION

It is obvious from the results of Experiment II that the opportunity to communicate does not necessarily result in an amelioration of conflict in our experimental bargaining situation. Indeed, it should be stated that the *opportunity* to communicate does not necessarily result in communication at all. Actually, little communication occurred; most of our *Ss* did not utilize their opportunity to communicate.

The results of Experiment II are in line with the finding of Deutsch (1960). Apparently the competitive orientation induced by the threat potential in our situation was sufficiently strong to overcome any possible ameliorating effects of communication. In the No Threat condition, where competitiveness is at a minimum, the advantage gained by the use of communication to coordinate effort was offset by the time consumed by talking. It would

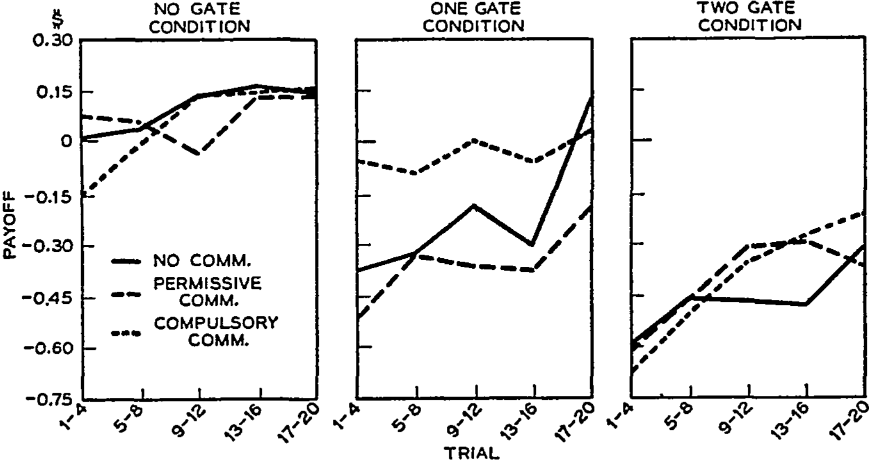

Fig. 7. Mean Joint Payoffs (Acme + Bolt) in the Communication Conditions Across the Three Threat Conditions

seem that the coordination problem posed for the Ss by our experimental game was sufficiently simple to be solvable without communication, given the existence of an appropriate motivational orientation. This will be considered further in our discussion of Experiment III.

Experiment III

Any straightforward interpretation of the effects of communication upon interpersonal bargaining is difficult to make based on the results of Experiment II. This is particularly true in view of the fact that the majority of our Ss did not use the opportunity to communicate that was presented to them. Thus, one may speculate that had our Ss in fact communicated, the outcome of Experiment II might have been quite different.

Studies of collective bargaining procedures suggest one of their important values lies in their ability to prevent disputants from breaking off communication (Douglas, 1958). Newcomb (1948) has used the term "autistic hostility" to denote a situation in which a breakdown, or absence, of communication leads to the exacerbation of interpersonal conflict. Rapoport (1960) has stressed the importance of continued communication in resolving international conflict.

Experiment III was undertaken to test the effect of forced, or compulsory, communication.

METHOD

The experimental apparatus, instructions to the Ss, and training procedures employed here were the same as in Experiment II. Ss received the following instructions on communication (the italicized portions are those which differ from the instructions used in Experiment II):

> During the game, when your trucks are en route, you *both will be required* to communicate with each other . . . (Here Ss received instructions on operating the intercom system) . . . In talking to the other player you may say anything you want. You may talk about the game, about what you'd like to happen in the game, what you're going to do, what you'd like the other player to do, or anything else

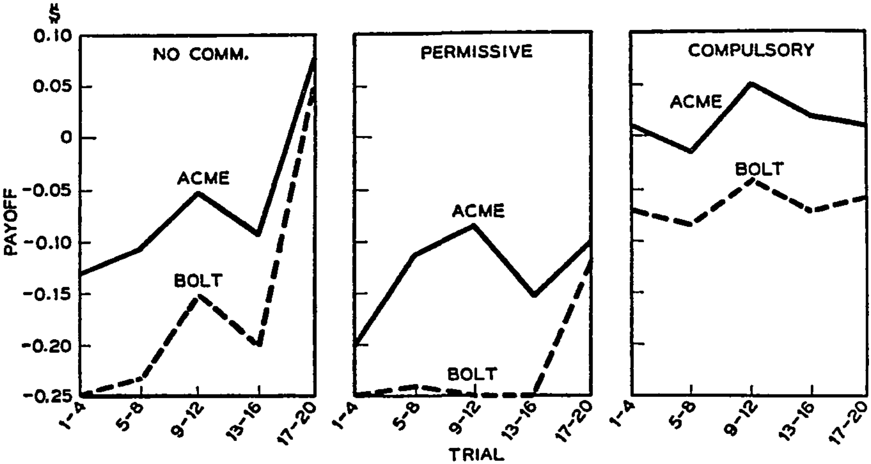

Fig. 8. Acme's and Bolt's Mean Payoffs in the Unilateral Threat Condition Across the Three Communication Conditions

that comes to mind. What you talk about is up to you. *But remember, you must say something to the other player on every trip.*

In Experiment III only a Bilateral Communication condition was run, again under three levels of threat potential. On trials where either S failed to talk, they were reminded by *E* at the conclusion of the trial of the requirement that they talk to the other player on every trial. In no group was it necessary to make this reminder on more than four trials.

Ten pairs of *S*s were entered randomly into each of the three treatment conditions. *S*s were drawn from the same pool used in Experiment II; however, none of the *S*s in this experiment had served in the previous one.

RESULTS

We will refer to the form of communication utilized in Experiment II as Permissive Communication; communication in Experiment III will be called Compulsory Communication; in Experiment I, No Communication was involved. Since in Experiment II no differences were found between our Bilateral and Unilateral Communication treatments, we have combined these two categories to increase the *N* of the Permissive Communication group.

Figure 7 presents the mean joint payoffs (summarized as the averages of four-trial blocks for convenience) for all three experiments. (See also Table 3). The effectiveness of the Compulsory Communication variable is seen in comparison of groups in the Unilateral Threat condition. Here alone, of all the conditions in which gates are present, does performance approach that of *S*s in the No Threat condition. In the Bilateral Threat condition the competitive motivation present seems too great to be overcome, even by the Compulsory Communication treatment. As was noted above, in the No Threat condition coordination was sufficiently simple that communication failed to produce any visible effect.

We can examine more closely performance in the Unilateral Threat condition. For example, it is possible that the effectiveness of Compulsory Communication as

TABLE 3

MEAN JOINT PAYOFFS (ACME + BOLT) PER TRIAL[1]

	No Threat	N	Unilateral Threat	N	Bilateral Threat	N
Permissive Communication	8.54	(10)	–34.58	(15)	–41.32	(10)
Compulsory Communication	6.09	(10)	–5.14	(10)	–41.73	(10)
No Communication*	10.41	(16)	–22.13	(16)	–47.44	(16)

[1] In an analysis of variance, significant ($p < 0.01$) F ratios were found for the "threat" and "communication" main effects and for the "threat × communication" interaction. Additionally, analysis of trend discloses a significan linear effect over trials ($p < 0.01$) for all groups, with no differences between group trends present.

* Discrepancies between these means and means computed from Table 1 may be attributed to different methods of averaging.

reflected in the joint payoff data is due to an increase in the payoff to Acme (the player possessing a threat potential), without a corresponding increase in Bolt's payoff. In other words, it is possible that Compulsory Communication acts to increase the advantaged player's bargaining power in an asymmetrical situation. Figure 8 breaks down the payoffs of Acme and Bolt in the three communication conditions. Although in all conditions Acme does better than Bolt, the margin of discrepancy does not vary substantially in the three conditions.[8]

An analysis of trend over trials (Grant, 1956) was performed on the data of the three experiments. Over-all, a significant linear component was present, as Figure 7 indicates; however, there were no differences in trend resulting from a partitioning of Ss by the two independent variables or their interactions. This result held true when the analysis was based on the joint payoff scores and on Acme's and Bolt's scores analyzed separately.

Again, we had intended to record our Ss' conversations for later content analysis. The same technical difficulties discussed above continued to cause difficulty. However, in Experiment III we were somewhat more successful in obtaining complete recordings of a small number of our Ss' conversations. In order to give the reader some notion of the sort of conversations which did take place we present below a transcript for selected trials of three pairs of Ss, one in each of the threat conditions, which were judged to be relatively typical. The numbers in parentheses below each conversation represent the payoff to each player on that trial (in imaginary dollars). Positive numbers represent winnings and negative numbers are losses.

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[8] A one-way analysis of variance of the algebraic difference in payoff (Acme–Bolt) yields a nonsignificant F ratio.

NO THREAT CONDITION

Trial	*Acme*	*Bolt*
1	I'll stop at 5 so you can go through first... I'm backing up for you.	
	(0.01)	(0.19)
2		I'll wait for you at 5.
	Okay, wait 6 seconds because I had to back up last time.	
	(0.26)	(0.10)
6		I'll wait at 5 this time.
	(0.27)	(0.09)

Trial	*Acme*	*Bolt*
7	I'll wait for you at 4 or 5. We might as well alternate 'cause I don't see how we'll make any money any other way.	Okay, that's true.
	(0.03)	(0.25)
12	Is it my turn to wait for you?	I'll wait for you this time at 5.
	Okay, I couldn't remember whose turn it was.	Let me know when you reach 15.
	(counting) 13, 14, 15.	
	(0.27)	(0.09)
13	I'll wait for you.	All right. I'll let you know at 15.
	Okay. I didn't go on break this morning and boy, am I hungry!	You can start now.
	I'll make 9 cents and you'll make 27. I started a few seconds too late.	
	(0.07)	(0.26)
16		I'll wait at 5 this time and let me know at 13 also.
	Okay. I'll count up so you know. 13, 14, 15.	Okay. Thank you.
	There's no way to make money except by compromising this way.	No, that's the only way and it comes out even that way, usually.
	Except for the first few times.	Yuh.
	(0.27)	(0.09)
17	I'll wait at 5.	Okay. You'll make 9 cents, I'll make 27.
	Yeah. Are you from around here?	Yuh, Summit [a local town]. . . . (counting) 13, 14, 15.
	Thank you. I won't ask you any more because I don't know you.	Okay. No.
	(0.08)	(0.26)
20		I'll wait for you this time.
	Okay. Do you have a watch on?	Yeah.
	What time is it?	Twenty-five after eleven. What number are you on now?
	Twelve.	Okay, (counting) 13, 14.
	(counting) 14, 15. You're such a cooperative partner.	What?
	Nice working for such a cooperative partner.	Oh, nice to work with you, too.
	(0.26)	(0.09)

UNILATERAL THREAT CONDITION

Trial	*Acme*	*Bolt*
1	Do you intend to take the main route?	Um . . . I'm taking it, but I've stopped. Are you going to close the gate?
	I've closed it already. I'm going to open it.	You finish yet?
	Yes, I have.	
	(0.26)	(0.05)
2		Are you on the main road?
	Yes, I am. I think we're going to meet again. I guess we've met, uh, I'm going to back up.	Where are you?
	I'm backing up.	What number are you on?
	Now I'm on 4.	Oh, all right. I'll go forward.
	I think we met again.	
	(–0.17)	(0.00)
5	My gate's closed.	Uh huh. I noticed.
	It's open now. Oh, we met?	Yes.
	I'm going to reverse.	We met?
	Yes.	Go now.
	I can go?	We'll try.
	No.	No? (laughs)
	Wait a sec. I'll back up some more. Okay. You must almost be there.	
	(–0.12)	(0.06)
6	My gate's closed.	Uh huh. Are you gonna leave it closed?
	No, it's open now. You go . . . . Oh. Oh, we met.	I'll go back.
	Okay.	Try it now.
	Okay, I'm there already.	
	(0.21)	(–0.03)
9	I'll back up.	Okay. I'm there.
	Oh, you're there? You beat me by a hair. I'm only halfway there.	I keep forgetting to push this thing down [probably a reference to switch on intercom].
	Oh.	
	(–0.06)	(0.11)
10	My gate's closed.	Are you there?
	Yes.	All right. You beat me by seven, eight.
	(0.26)	(0.10)

Trial	*Acme*	*Bolt*
13		Are you there?
	Yeah.	Are you gonna . . . oh, it's open.
	It's open.	
	(0.26)	(0.05)
14	I'll back up.	Try going forward.
	Okay. No.	Not yet?
	You keep coming now.	What, go forward?
	Yeah.	On 15, 16, okay.
	I wonder how many times we're going to play this.	
	(−0.07)	(0.09)
19		Are you going back?
	Yes, are you going forward?	Yes.
	I'm back. There.	Um, no.
	Oh.	
	(0.01)	(0.18)
20		You going forward?
	Uh huh.	What number are you on?
	(counting) 10, 11.	10?
	Okay.	You there?
	Yeah, no, we're blocked.	Oh, I'll go back.
	Are you stopped or going back?	I'm going forward.
	Oh, now you're going forward. Oh, I guess we're okay now.	I'm on 9; are you there?
	Yeah.	I think I'm glad I'm not a truck driver.
	(0.20)	(−0.01)

BILATERAL THREAT CONDITION

Trial	*Acme*	*Bolt*
1	You decide on your route?	I'm taking the main route.
	I am, too.	Oh, we're stopped. What happens now?
	What did you say?	Did you stop?
	Yeah, the lane is blocked completely.	Well, who's going to back up?

Trial	Acme	
	Well, I don't know. You gonna back up this time?	All right. I'll back up.
	All right.	Your gate is locked.
	I know it's locked.	That wasn't very fair.
	Anything's fair.	Well, what are you going to do?
	I don't have to do anything. I'm going to my destination.	This is not funny.
	(laughs)	At your destination?
	No!	I'll never reach mine at this point.
	I've reached mine.	Well?
	Sit tight.	Planned your next route?
	No, have you?	I've got some ideas.
	Thanks a lot.	I'm getting there slowly but surely.
	(laughs)	
	(–0.95)	(–1.87)
2		I've got my plan.
	I've got mine, too.	How're you doing?
	Fine. How are you doing?	Oh, I'm fine. I'm not getting any place fast, though.
	This doesn't move very quick.	Slow trucking.
	That makes two of us.	Where are you now?
	Twenty-seven [on alternate route]. Where are you?	Twenty-four (both laugh). Looks like we both don't trust each other. I'll lose money this game.
	(–0.44)	(–0.54)
5	We're stopped. What are we going to do now?	Oh, I backed up the first time. Now it's your turn.
	All right. What are you going to do?	I'm going to take the alternate route.
	Go right ahead.	Are you going to open your gate?
	No.	What are you going to do now?
	I've got to at least make the loss even.	I hear only one ticking [a reference to noise made by the apparatus].
	(–1.02)	(–0.75)

Trial	*Acme*	*Bolt*
7		You've got yours closed, too.
	We're both stopped.	Are you going to open your gate?
	Why should I?	I'll do the same next time.
	Is that a threat?	You playing tricks?
	No.	I'll lose five dollars this trip because of you.
	(–1.33)	(–0.75)
9	I see you've got your gate closed. What route are you on?	Why should I tell you?
	Okay, if that's the way you want to play.	No, I'll tell you where I am if you tell me where you are.
	I asked you first.	So am I [sic]. . . . At 17. . . . How far are you?
	I don't believe you.	Have it your way.
	(–1.33)	(–0.75)
13	(Unintelligible)	You had yours closed.
	I think that's my business.	Why don't you open your gate?
	Don't have time.	I'm not getting any place.
	(–0.60)	(–0.23)
14	You have yours shut, too.	What?
	You never let me through.	Let's both open our gates as long as we're going the other way.
	I know you are (sarcastically).	
	(–0.20)	(–0.22)
18	What route are you taking?	(no answer)
	I think we both are going bankrupt.	They [sic] just don't trust each other, right?
	(–0.39)	(–0.50)
20		Your gate's closed again.
	So is yours, so that means you must have taken the alternate route.	Why? What gives you that idea?
	Well, you wouldn't be crazy enough to go to the main route with my gate closed.	Well, maybe I think I can persuade you to open it.
	You know better than that.	Do I? . . . I get the use of these gates all mixed up. I shut mine when I don't want to and, oh, . . .
	If I go into the trucking business I'm not going to have gates.	
	(–0.21)	(–0.22)

DISCUSSION

In the introduction, we presented our view of bargaining as a situation in which both cooperative and competitive tendencies are present and acting upon the individual. From this point of view, it is relevant to inquire as to the conditions under which a stable agreement of any form will develop. However, implicit in most models of bargaining (e.g., Zeuthen, 1930; Stone, 1958; Cervin, 1961; Suppes and Carlsmith, 1961) is the assumption that the cooperative interests of the bargainers will be sufficiently strong to insure that some form of mutually satisfactory agreement will be reached. For this reason, such models have focused upon the form of the agreement reached by the bargainers. Siegel and Fouraker (1960) report a series of bargaining experiments quite different in structure from ours in which only one of many pairs of subjects was unable to reach agreement. Siegel and Fouraker explain this rather startling statistic as follows:

> Apparently the disruptive forces which lead to the rupture of some negotiations were at least partially controlled in our sessions. . . . Some negotiations collapse when one party becomes incensed at the other, and henceforth strives to maximize his opponent's displeasure rather than his own satisfaction. . . . Since it is difficult to transmit insults by means of quantitative bids, such disequilibrating behavior was not induced in the present studies. If subjects were allowed more latitude in their communications and interactions, the possibility of an affront–offense–punitive behavior sequence might be increased [p. 100].

In our experimental bargaining situation, the availability of threat clearly made it more difficult for bargainers to reach a mutually profitable agreement. Indeed, Bilateral Threat presents a situation so conflict-fraught that no amount of communication seems to have an ameliorating effect. These tendencies we believe are not confined to our experimental situation. The "affront – offense – punitive behavior sequence" to which Siegel and Fouraker refer, and which we have observed in our experiment, are common attributes of everyday interpersonal conflict. The processes which underlie them have long been of interest to social scientists and an imposing set of theoretical constructs have been employed to explain them.

Dollard *et al.* (1939) have cited a variety of evidence to support the view that aggression (i.e., the use of threat) is a common reaction to a person who is seen as the agent of frustration. There seems to be little reason to doubt that the use of threat is a frequent reaction to interpersonal impasses. However, everyday observation indicates that threat does not inevitably occur when there is an interpersonal impasse. We would speculate that it is most likely to occur when the threatener has no positive interest in the other person's welfare (he is either egocentrically or competitively related to the other); when the threatener believes that the other has no positive interest in his welfare; and when the threatener anticipates either that his threat will be effective or, if ineffective, will not worsen his situation because he expects the worst to happen if he does not use his threat. We suggest that these conditions were operative in our experiment; the subjects were either egocentrically or competitively oriented to one another[9] and they felt that they would not be worse off by the use of threat.

Everyday observation suggests that the

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[9] A post-experimental questionnaire indicated that, in all three experimental conditions, the Ss were most strongly motivated to win money, next most strongly motivated to do better than the other player, next most motivated to "have fun," and were very little or not at all motivated to help the other player.

tendency to respond with counterthreat or increased resistance to attempts at intimidation is also a common occurrence. It is our belief that the introduction of threat into a bargaining situation affects the meaning of yielding. Although we have no data to support this directly, we will attempt to justify it on the basis of some additional assumptions.

Goffman (1955) has pointed out the pervasive significance of "face" in the maintenance of the social order. In this view, self-esteem is a socially validated system which grows out of the acceptance by others of the claim for deference, prestige and recognition which one presents in one's behavior toward others. Thus, the rejection of such a claim would be perceived (by the recipient) as directed against his self-esteem and one which, in order to maintain the integrity of his self-esteem system, he must react against rather than accept.

One may view the behavior of our subjects as an attempt to make claims upon the other; an attempt to develop a set of shared expectations as to what each was entitled to. Why then did the subjects' reactions differ so markedly as a function of the availability of threat? The explanation for this lies, we believe, in the cultural interpretation of yielding (to a peer or subordinate) under duress, as compared to giving in without duress. The former, we believe, is perceived as a negatively valued form of behavior, with negative implications for the self-image of the individual who so behaves. At least partly, this is so because the locus of causality is perceived to be outside the voluntary control of the individual. No such evaluation, however, need be placed on the behavior of one who "gives in" in a situation where *no* threat or duress is a factor. Rather, we should expect the culturally defined evaluation of such an individual's behavior to be one of "reasonableness" or "maturity." Again, this may be because the cause of the individual's behavior is perceived to lie within the individual.

One special feature of our experimental game is worthy of note: the passage of time, without coming to an agreement, is costly to the players. There are, of course, bargaining situations in which the lack of agreement may simply preserve the *status quo* without any worsening of the bargainers' respective positions. This is the case in the typical bilateral monopoly case, where the buyer and seller are unable to agree upon a price (e.g., see Siegel and Fouraker, 1960; Cervin, 1961). In other sorts of bargaining situations, however (e.g., labor–management negotiations during a strike; inter-nation negotiations during an expensive cold war), the passage of time may play an important role. In our experiment, we received the impression that the meaning of time changed as time passed without the bargainers reaching an agreement. Initially, the passage of time seemed to pressure the players to come to an agreement before their costs mounted sufficiently to destroy their profit. With the continued passage of time, however, their mounting losses strengthened their resolution not to yield to the other player. They comment: "I've lost so much, I'll be damned if I give in now. At least I'll have the satisfaction of doing better than she does." The mounting losses and continued deadlock seemed to change the game from a mixed motive into a predominantly competitive situation.

The results of Experiments II and III justify, we believe, a reconsideration of the role of communication in the bargaining process. Typically, communication is perceived as a means whereby the bargainers coordinate effort (e.g., exchange bids, indicate positions, etc.). Usually, little emphasis is given to interaction of communication with motivational orientation. Certainly the coordination function of communication is important. However, as Siegel and Fouraker (1960) point out, free communication may also be used to convey information (e.g., threats, insults, etc.) which may intensify the competitive aspects of the situation.

It should be emphasized here that the "solution" of our bargaining problem (i.e., alternating first use of the one-lane section of the main route) is a simple and rather obvious one. Indeed, the sort of coordination of effort required by the game is sufficiently simple to be readily achievable without the aid of communication. (Note that Ss in the No Threat–No Communication conditions did as well as Ss in the two No Threat conditions with communication.) More important than this coordinating function, however, is the capacity of communication to expedite the development of agreements. In this context, agreements serve a function similar to that ascribed by Thibaut and Kelley to the social norm; that is, ". . . they serve as substitutes for the exercise of personal influence and produce more economically and efficiently certain consequences otherwise dependent upon personal influence processes" (Thibaut and Kelley, 1959, p. 130). Effective communication, by this line of reasoning, would be aimed at the development of agreements or, to state it another way, at a resolution of the competitive orientation which produces conflict in the bargaining situation.

One must grant that our Ss were relatively unsophisticated in the techniques of developing agreements under the stress of competition. Possibly persons who deal regularly with problems of conflict resolution (e.g., marriage counselors, labor–management arbitrators, diplomats, etc.) would have little difficulty in reaching agreement, even under our Bilateral Threat condition.

Another barrier to effective communication lies in the reticence of our Ss. As we noted above, our Ss found talking to an unknown partner a strange and rather uncomfortable experience. This factor alone would limit the possibility of any communication, let alone communication which was effective.

The studies reported here are part of an ongoing program of research on the factors affecting interpersonal bargaining. In an experiment presently under way, we are attempting to develop communication procedures which will be effective in ameliorating conflict in the Bilateral Threat condition. Additionally, in projected studies we intend to investigate the effect of other structural factors on bargaining behavior.

It is, of course, hazardous to generalize from a set of laboratory experiments to the problems of the real world. But our experiment and the theoretical ideas which underlie them can perhaps serve to emphasize some notions which, otherwise, have some intrinsic plausibility. In brief, these are the following: (1) There is more safety in cooperative than in competitive coexistence. (2) The mere existence of channels of communication is no guarantee that communication will indeed take place; and the greater the competitive orientation of the parties *vis-à-vis* each other, the less likely will they be to use such channels as do exist. (3) Where barriers to communication exist, a situation in which the parties are compelled to communicate will be more effective than one in which the choice to talk or not is put on a voluntary basis. (4) If the bargainers' primary orientation is competitive, communication which is not directed at changing this orientation is unlikely to be effective. (5) It is dangerous for bargainers to have weapons at their disposal. (6) Possibly, it is more dangerous for a bargainer to have the capacity to retaliate in kind than for him not to have this capacity, when the other bargainer has a weapon. This last statement assumes that the one who yields has more of his values preserved by accepting the agreement preferred by the other than by extended conflict. Of course, in some bargaining situations in the real world the loss incurred by yielding may exceed the loss due to extended conflict.

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